THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today
(1) was not written for publication in a law journal and
(2) is not binding precedent of the Board.

Paper No. 15

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte GAMINI A. VEDAGE

Appeal No. 95-2835
Application 08/127,659[1]

HEARD: December 7, 1998

Before JOHN D. SMITH, GARRIS and WARREN, *Administrative Patent Judges*.

WARREN, *Administrative Patent Judge*.

Decision on Appeal

This is an appeal under 35 U.S.C. § 134 from the decision of the examiner finally rejecting claims 1 through 10. Claim 1 is illustrative of the claims on appeal:

1. In a process for the catalytic hydrogenation of *meta*-toluenediamines to their ring hydrogenated counterparts by contacting a *meta*-toluenediamine with hydrogen in the presence of a hydrogenation catalyst in the presence of a solvent, the improvement which comprises:

utilizing a catalyst comprising rhodium carried on a support as the hydrogenation catalyst, and

utilizing a secondary C_3-C_{10} alcohol as the solvent.

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[1] Application for patent filed September 27, 1993.

The appealed claims as represented by claim 1[2] are drawn to improved processes for the catalytic hydrogenation of a *meta*-toluenediamine or mixtures of *meta*- toluenediamine wherein the improvement comprises the use of at least a catalyst comprising at least rhodium carried on a support and of a secondary C_3-C_{10} alcohol. According to appellant, the use of the supported rhodium hydrogenation catalyst and a secondary C_3-C_{10} alcohol *per se* enhances the reaction rate and yield at moderate pressures and extends catalyst life and activity without the necessity to remove *o*-toluenediamine impurities from the *meta*-toluenediamine feed (specification, e.g., page 3, lines 5-11).

The references relied on by the examiner are:

Cross	3,445,516	May 20, 1969
Chung et al. (Chung)	3,856,862	Dec. 24, 1974
Massie	3,914,307	Oct. 21, 1975
Whitman	5,214,212	May 25, 1993

The examiner has rejected appealed claims 1 through 10 under 35 U.S.C. § 103 as being unpatentable over Whitman, and as being unpatentable over Whitman in view of Chung, Massie and Cross. We affirm.

Rather than reiterate the respective positions advanced by the examiner and appellant, we refer to the examiner's answer and to appellant's brief for a complete exposition thereof.

Opinion

We have carefully reviewed the record on this appeal and based thereon find ourselves in agreement with the examiner that the claimed improved process encompassed by appealed claims 1 and 7 through 9 would have been obvious over the teachings of Whitman and over the combined teachings of Whitman, Chung, Massie and Cross to one of ordinary skill in this art at the time the claimed invention was made.

[2] Appellant states in his brief (page 2) that "[c]laims 1-6 are to be considered as one group and [c]laims 7-10 as a second group." Appellant has separately argued appealed claims 1 and 7 through 9 in his brief. Thus, we decide this appeal based on appealed claims 1 and 7 through 9. 37 CFR § 1.192(c)(5) and (6)(1993).

Counsel confirmed at oral hearing that appellant concedes that a *prima facie* case of obviousness has been made out over the references applied by the examiner (see also brief, page 4). Accordingly, we have carefully reassessed the patentability of the claimed invention as a whole based on the totality of the record, including all the evidence of obviousness and of nonobviousness, giving due consideration to the weight of appellant's arguments and to the objective evidence in appellant's specification and declaration[3] under 37 CFR § 1.132. *See generally In re Johnson*, 747 F.2d 1456, 1460, 223 USPQ 1260, 1263 (Fed. Cir. 1984).

Appellant's arguments focus on the objective evidence in his specification and declaration (specification Tables 4 and 5[4]; declaration Tables A and B). We must agree with appellant that the objective evidence establishes that unexpected results were obtained with processes wherein meta-toluenediamines were hydrogenated utilizing a catalyst consisting of rhodium on a titanium dioxide support or rhodium on an alumina support and a solvent consisting of isopropanol, 2-butanol or a mixture of isopropanol and tetrahydrofuran, when compared to processes which utilized the same supported catalysts and *n*-propanol, *t*-butanol, *n*-butanol and tetrahydrofuran. We also find, for the reasons advanced by appellant (brief pages 6-7) that evidence in the declaration rebuts the examiner's contention that the comparisons do not constitute a side-by-side comparison because of differences in temperature (answer, page 9).

Thus, the dispositive issue in this appeal is whether the evidence of nonobviousness is commensurate in scope with the subject matter encompassed by the appealed claims and disclosed in Whitman (answer, pages 8-9; brief, page 6). With respect to the scope of the appealed claims, we find that appealed claims 1 and 7-9 are an "improvement" over prior art processes wherein a hydrogenation catalyst is used in combination with a solvent to hydrogenate meta-toluenediamines to their ring hydrogenated counterparts in view of the "Jepson" claim format.[5] *See In re Ehrreich*, 590 F.2d 902, 904, 200 USPQ 504, 510 (CCPA 1979). Indeed, appellant's improvement "comprises" at least using

[3] The Vedage declaration was filed on September 16, 1994 (Paper No. 7).

[4] Specification Tables 4 and 5 are found in specification Examples 4 and 5. We find that specification Examples 1-3 utilize tetrahydrofuran as the solvent and thus this subject matter does not fall within the appealed claims.

a catalyst "comprising" at least rhodium carried on a support and a secondary C_3-C_{10} alcohol in the hydrogenation process and appellant does disclose that the catalyst can contain '[o]ther metals optionally carried on the same or a separate support" and that other solvents can be present (specification, pages 3-4). *Exxon Chemical Patents Inc. v. Lubrizol Corp.*, 64 F.3d 1553, 1555, 35 USPQ2d 1801, 1802 (Fed. Cir. 1995) ("The claimed composition is defined as comprising - meaning containing at least - five specific ingredients."); *In re Baxter*, 656 F.2d 679, 686-87, 210 USPQ 795, 802-03 (CCPA 1981) ("As long as one of the monomers in the reaction is propylene, any other monomer may be present, because the term 'comprises' permits the *inclusion* of other steps, elements, or materials."). We find that appealed claims 1 and 7-9 do not contain any limitations on the amount of the supported rhodium hydrogenation catalyst or any other hydrogenation catalyst or on the secondary alcohol or any other solvent which must or may be present.[6] Indeed, while appellant discloses that it is the rhodium catalyst system and the secondary alcohols that provide respective advantages to the claimed process (specification, e.g., page 2, lines 5-9), the term "comprises" would permit the inclusion of other metals in the rhodium catalyst system as well as additional catalysts and other solvents in amounts which would adversely affect the basic and novel characteristics of the claimed composition. *Compare In re Herz*, 537 F.2d 549, 551-52, 190 USPQ 461, 463 (CCPA 1976); *In re Janakirama-Rao*, 317 F.2d 951, 954, 137 USPQ 893, 896 (CCPA 1963); *Ex parte Davis*, 80 USPQ 448, 450 (Bd. App. 1948).

Whitman teaches the catalytic hydrogenation of, *inter alia*, *meta*-toluenediamines (e.g., col. 6, lines 66-67) with a supported hydrogenation catalyst, which can contain rhodium separately or mixed with other metals and can be used with other supported hydrogenation catalysts, in the presence of a solvent, which can be isopropanol and can be mixed with other solvents (col. 7, lines 7-40), wherein the hydrogenation is conducted in the presence of at least one salt of a transition or lanthanide metal as a

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[5] See 37 CFR § 1.75(e)(1982); MPEP § 608.01(m)(7th ed., July 1998; 600-64).

[6] We will not read into the appealed claims any limitations on the amounts of secondary alcohols or other solvents or the amounts of any hydrogenation catalysts which can be used in the hydrogenation processes as disclosed in the specification (pages 3-4) as such limitations are not expressly set forth in the claims. *In re Priest*, 582 F.2d 33, 38, 199 USPQ 11, 15 (CCPA 1978), *citing In re Prater*, 415 F.2d 1393, 1405, 162 USPQ 541, 551 (CCPA 1969).

promoter. Whitman discloses that the transition or lanthanide metal salt promoted catalytic hydrogenation process results in an increase in reaction rate, a decrease in the induction period and a decrease in the amount of higher boiler by-products (e.g., col. 5, line 53, to col. 6, line 5, and col. 8, lines 7-10). Indeed, one of ordinary skill in this art would have known from these teachings of Whitman that the elimination of the transition or lanthanide metal promoter from the otherwise old process (e.g., col. 1, line 12, to col. 5, line 50) would result, *inter alia*, in a decreased reaction rate and an increased in the induction period from the improvement in these parameters taught in the reference.

It is well settled that objective evidence of non-obviousness must be commensurate in scope with the claims. *In re Kulling*, 897 F.2d 1147, 1149-50, 14 USPQ2d 1056, 1058 (Fed. Cir. 1990); *In re Grasselli*, 713 F.2d 731, 743, 218 USPQ 769, 778-79 (Fed. Cir. 1983); *In re Clemens*, 622 F.2d 1029, 1035-36, 206 USPQ 289, 295-96 (CCPA 1980); *In re Greenfield*, 571 F.2d 1185, 1189, 197 USPQ 227, 230 (CCPA 1978); *In re Lindner*, 457 F.2d 506, 508, 173 USPQ 356, 358 (CCPA 1972); *In re Tiffin*, 488 F.2d 791, 792, 171 USPQ 294 (CCPA 1971). As discussed above, we find that the objective evidence in appellant's specification and declaration is directed to comparisons of the claimed catalytic hydrogenation processes with known catalytic hydrogenation processes which do not contain transition or lanthanide metal salt promoters as disclosed in Whitman, wherein the compared processes essentially differ in the alcohol solvent. While these comparisons involve supported rhodium catalysts in the presence of a secondary alcohol, and thus, as counsel pointed out at oral hearing, the evidence meets the minimum requirements of the appealed claims, we find that the comparisons do not provide objective evidence commensurate in scope with the appealed claims for two reasons. First, as we have discussed above, the appealed claims do not contain limitations which would (1) exclude hydrogenation catalysts that contain metals in addition to rhodium on the same support or additional catalysts and the presence of other solvents, both in amounts which would adversely affect the basic and novel characteristics of the claimed composition and/or (2) exclude transition or lanthanide metal salt promoters, all of which are taught in Whitman to improve the reaction rate and yield, and none of which is shown in the objective evidence in appellant's specification and declaration. *Kulling*, *supra*; *In re Dill*, 604 F.2d 1356, 1361, 202 USPQ 805, 808-09 (CCPA 1979). And, second, we are of the opinion that the objective evidence in appellant's specification and

declaration would not provide the basis for one of ordinary skill in this art to reasonably predict the performance of a hydrogenation process for *meta*-toluenediamines wherein the process comprises the use of (1) hydrogenation catalysts that contain metals in addition to rhodium on the same support or additional catalysts and the presence of other solvents, both in amounts which would adversely affect the basic and novel characteristics of the claimed composition and/or (2) transition or lanthanide metal salt promoters, all of which are taught in Whitman to increase the reaction rate and yield, and none of which is shown in the objective evidence in appellant's specification and declaration. *Compare Clemens*, *supra*; *In re Boesch*, 617 F.2d 272, 277, 205 USPQ 215, 219-20 (CCPA 1980); *In re Kollman*, 595 F.2d 48, 56, 201 USPQ 193, 199 (CCPA 1979); *Lindner*, *supra*; *In re Landgraf*, 436 F.2d 1046, 1050, 168 USPQ 595, 597 (CCPA 1971). Appellant submits that "the catalysts and solvents used in the examples of the instant Specification are representative of catalyst supports and alcohols used in the prior art for the hydrogenation of *meta*-toluenediamines" (brief, page 6). However, this argument is not supported by factual evidence, as we have demonstrated above, and thus is insufficient to establish that the unexpected results obtained with the processes in the specification Examples and the declaration extends to the full scope of the appealed claims. *Lindner*, *supra*. Thus, the objective evidence in appellant's specification and declaration leads to the conclusion that appealed claims 1 and 7 through 9 read on both obvious and nonobvious subject matter and thus are too broad in the sense of § 103. *Tiffin, supra*.

Accordingly, based on our consideration of the totality of the record before us, we have weighed the evidence of obviousness found in the teachings of Whitman and in the combined teachings of Whitman, Chung, Massie and Cross with appellant's countervailing evidence of and argument for nonobviousness and conclude that the claimed invention encompassed by appealed claims 1 through 10 would have been obvious as a matter of law under 35 U.S.C. § 103.

The examiner's decision is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED

JOHN D. SMITH Administrative Patent Judge	)	
BRADLEY R. GARRIS Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
CHARLES F. WARREN Administrative Patent Judge	)	

Patent Assistant
Air Products and Chemicals, Inc.
7201 Hamilton Blvd.
Allentown, PA 18195-1501